

We Claim:

1       1. A coupler for joining a first conduit having a first diameter and a second conduit,  
2       the first conduit having an axis and a first outwardly extending flange having a second  
3       diameter axially spaced from a second outwardly extending flange having a third diameter,  
4       the coupler comprising:  
5               a housing including an annular hole having an outer diameter and an inner diameter;  
6               the outer diameter of the annular hole being greater than the second diameter of the  
7       first outwardly extending flange;  
8               the inner diameter of the annular hole being greater than the first diameter of the  
9       first conduit, to permit axial movement of the coupler over the first conduit;  
10               the inner diameter of the annular hole being less than the second diameter of the  
11       first outwardly extending flange and less than the third diameter of the second outwardly  
12       extending flange to prohibit movement of the portions of the housing defining the annular  
13       hole axially along the first conduit over either of the first outwardly extending flange and the  
14       second outwardly extending flange;  
15               the housing and the annular hole being formed with at least two sectors radially  
16       compressible into a snap fit relationship with the portions of the sectors defining the  
17       annular hole disposed between the first outwardly extending flange and the second  
18       outwardly extending flange; whereby  
19               the coupler is moveable over the first outwardly extending flange to engage the  
20       second conduit, with a portions of the sectors defining the annular hole disposed between  
21       the first outwardly extending flange and the second outwardly extending flange.

1        2. A coupler in the form of a housing having opposite end faces, the coupler for  
2        joining two conduits together, wherein the coupler comprises:  
3                an annular hole extending along an axis between said opposite end faces of the  
4        housing, the annular hole comprising a first inner diameter, lugs having a second inner  
5        diameter, and a flange having a third inner diameter, wherein the first diameter is greater  
6        than the second diameter, and the second diameter is greater than the third diameter;  
7                the housing comprising a plurality of sectors that snap together; and  
8                the plurality of sectors being identical to each other in shape and size.

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2        3. The coupler of claim 2, wherein the sectors are sufficiently resilient to enable  
2        snap lock action in a relative radially inward direction between said plurality of sectors.

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2        4. The coupler of claim 2, wherein at least one stopping flange is located at an end  
2        face of each of the sectors and engages an end face of another of the sectors and  
3        prevents relative axial movement between the sectors in first and second axial directions.

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2        5. The coupler of claim 4, wherein each sector has an additional said stopping  
2        flange preventing relative movement between the sectors.

1    ~~Sub A4~~6. A coupler in the form of a nut having an annular hole extending between end  
2    faces and centered on an axis, the coupler being adapted for coupling two conduits  
3    together by a bayonet twist and lock action, comprising:  
4        two sectors of the nut forming having portions defining the annular hole and for  
5    surrounding ends of the two conduits by respective axial ends adjacent end faces of the  
6    nut;  
7        the sectors being sufficiently resilient to snap lock together; wherein  
8        the sectors snap lock together by relative radially inward movement.

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1 ~~sub A5~~ 10. A coupler in the form of a nut, the nut having two end faces and an annular hole  
2 extending between the two end faces along an axis, the coupler comprising:  
3       the nut having two separable sectors joined along mating surfaces, the mating  
4       surfaces comprising a portion defined by a set of lines parallel to the axis of the annular  
5       hole and a portion perpendicular to said axis; and  
6       wherein the portion of said mating surfaces defined by lines parallel to the axis  
7       prevents relative movement of the sectors in a plurality of radial directions and the portion  
8       of said mating surfaces that is perpendicular to said axis prevent relative movement of the  
9       sectors in a plurality of axial directions when said sectors are assembled together.

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8        the coupler comprises a locking flange protruding axially from an end face of the  
9    coupler, said locking flange having a socket adapted to engage a protrusion on the second  
10   of the two conduits for bayonet lock action.

1

1        13. A pipe combination, comprising:

2        a first pipe having a first end with a first bayonet tube disposed at the first end;  
3        a second pipe having a second end with an annular space defined between a first  
4    annular flange and a second annular flange, the first annular flange having a diameter  
5    greater than the diameter of the annular space;

6        a pipe coupler having a wall with an axial bore extending between opposing first and  
7    second faces, the axial bore having a diameter;

8        first portions of the coupler extending into the bore at the first face, the first portions  
9    having a diameter greater than the diameter of the annular space and less than the  
10   diameter of the first flange;

11        second portions of the coupler extending into the bore and forming a second  
12   bayonet tube;

13        the coupler being adapted for disposition at an operative site with the first portions of  
14   the coupler disposed in the space of the first pipe;

15        the coupler being rotatable at the operative site to engage the first bayonet tube with  
16   the second bayonet tube and to draw the second end of the second pipe into fluid  
17   communication with the first end of the first pipe; and

18        the coupler being formed in at least two separate parts adapted to be radially snap  
19   fit to form the coupler at the operative site.

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1 Sub A<sub>6</sub>>14. A combination, comprising:

2 (a) a first conduit having an outwardly extending flange on an end of the first  
3 conduit,

4 (b) a second conduit having bosses or threads extending radially outward on an end  
5 of the second conduit,

6 (c) a coupler forming an annular hole, coupler having portions defining said annular  
7 hole, said portions having an inwardly extending flange that receives and holds the  
8 outwardly extending flange on the end of the first conduit and lugs or threads that couple to  
9 the bosses or threads on the end of the second conduit for a coupled configuration; and

10 wherein the coupler comprises two sectors connected in fixed relation by relative  
11 radial movement in a snap lock action.

12 15. The combination of claim 14, wherein the first conduit has a second outwardly  
13 protruding flange that prevents axial movement of the coupler along the first conduit.

14 Sub A<sub>7</sub>>16. The combination of claim 14, wherein the two sectors snap locking together with  
15 said portions defining the annular hole surrounding the first conduit and retained thereon by  
16 interference of the flanges

17. The coupler and conduits combination of claim 16, further comprising ribs and  
18 grooves on the two sectors, wherein ribs seat in grooves in the fixed relation and limit radial  
19 movement in a plurality of directions, and wherein the first conduit stops relative radial  
20 movement of the two sectors in all remaining directions.

1       18. The coupler and conduits combination of claim 16, wherein:

2       the first conduit has a nipple on the end; and

3       the nipple is surrounded by the coupler.

1       19. A method of using a coupler in the form of a nut having a first sector and a  
2       second sector defining an annular hole extending between end faces of the nut, the  
3       coupler being adapted for coupling a first and a second conduit together, the method  
4       comprising the steps of:

5               (a) separating said first and the second sectors of the coupler sufficiently to receive  
6       the first conduit,

7               (b) surrounding an outwardly extending flange of the first conduit by portions of the  
8       sectors defining said annular hole,

9               (c) flexibly forcing the sectors radially inwardly to a snap lock configuration, wherein  
10      the first and second sectors of the coupler form said nut and surround the first conduit, and

11               (d) moving the coupler axially and rotationally with respect to the second conduit  
12      thereby coupling the second conduit to the first conduit

1       20. The method of using of claim 19 wherein the step of flexibly forcing the sectors  
2       radially inwardly further comprises:

3               (a) locating a first rib of the first sector in a second groove of the second sector,

4               (b) hinging the first sector relative to the second sector about said first rib radially

5       inwardly to engage the second sector, and

- 6                   (c) snapping a second rib of said first sector into a first groove of the second sector
- 7                   at a location diametrically opposite said first rib and said second groove relative to said
- 8                   annular hole.